

CLAIMS

What is claimed is:

1. A method for tracking a user's activities in a web site and decreasing user activity counts that represent a user's previous activities, comprising the steps of:
  - (a) storing a previous user activity count in a database configured to track the user's activities in the web site;
  - (b) receiving a current user activity count derived from the user's current activities in the web site;
  - (c) applying a weighted reduction to the previous user activity count to form a weighted activity count;
  - (d) combining the weighted activity count with the current user activity count to form an updated user activity count; and
  - (e) replacing the previous user activity count in the database with the updated user activity count.
2. A method as in claim 1 wherein the step of applying a weighted reduction further comprises the step of applying a time weighted function to decrease the previous user activity count.
3. A method as in claim 1 wherein the step of applying a weighted reduction further comprises the step of applying a time weighted exponential function to decrease the previous user activity count.
4. A method as in claim 1 wherein the step of applying a weighted reduction further comprises the step of applying the function  $f(t) = ce^{\frac{-.693t}{\tau}}$  to the previous user activity count,
 

where  $\tau$  is the half life;

c is the previous user activity count; and

t is a time interval since the original user's activity count was last updated.

5. A method as in claim 1 further comprising the step of repeating steps (b) through (e) for each current user activity count that is received.

6. A method for determining a user's preferences for user activities in a web site by tracking a user's activities using user activity counts and aging the user activity counts for a user's previous activities in the web site, comprising the steps of:

- (a) storing an original user activity count in a database configured to track the user's activities in the web site;
- (b) receiving a current user activity count derived from the user's activities in the web site;
- (c) applying a time weighted reduction to the previous user activity count to form a weighted activity count;
- (d) combining the weighted activity count with the current user activity count to create an updated user activity count; and
- (e) identifying a preferred user activity based on the updated user activity count.

7. A method as in claim 6 wherein the step of applying the time weighted reduction further comprises the step of applying a time weighted exponential function to decrease the previous user activity count.

8. A method as in claim 6 wherein the step of applying a time weighted reduction

further comprises the step of applying the function  $f(t) = ce^{\frac{-.693t}{\tau}}$  to the previous user activity count,

where  $\tau$  is the half life;

c is the current user activity count; and

t is a time interval since the original user's activity count was last updated.

9. A method as in claim 1 further comprising the step of repeating steps (b) through (d) for each current user activity count that is received.

10. A method for personalizing digital objects and content associated with a web page sent to a user across a network, comprising the steps of:
- (a) accessing hierarchical categories that include a plurality of keywords connected to the categories;
  - (b) associating a plurality of resources with the keywords, wherein the resources refer to digital objects;
  - (c) recording activity levels for keywords associated with resources accessed by the user;
  - (d) weighting the activity levels recorded for the keywords based on a user's activity which has occurred; and
  - (e) delivering digital objects to the user based on the weighted activity levels for a plurality of keywords.
11. A method as in claim 10, wherein step (d) further comprises the step of weighting the activity levels associated with the keywords based on a date user activity occurred.
12. A method as in claim 10, wherein step (d) further comprises the step of weighting the activity levels associated with the keywords based on a length of time the digital object is used.
13. A method as in claim 10, wherein the step of weighting the activity associated with the keywords further comprises the step of tracking the activity of the user by storing a count representing the number of times each resource is accessed.
14. A method as in claim 13, further comprising the step of decreasing the count as an amount of time increases after the user's activity took place.
15. A method as in claim 13, further comprising the step of exponentially decreasing the count as an amount of time since the user's activity took place increases.

16. A method as in claim 13, further comprising the step of exponentially decreasing the count as an amount of time since the user's activity took place increases using a factor  $e^{(-.693t/\tau)}$ .

17. A method as in claim 10, further comprising the step of capturing the user's activity by recording universal resource locators (URLs) clicked on by the user.

18. An article of manufacture, comprising:

a computer usable medium having computer readable program code means embodied therein for personalizing digital objects and content associated with a web page sent to a user across a network:

computer readable program code means for accessing hierarchical categories that include a plurality of keywords connected to the categories;

computer readable program code means for associating a plurality of resources with the keywords, wherein the resources refer to digital objects;

computer readable program code means for recording activity levels for keywords associated with resources accessed by the user; and

computer readable program code means for weighting the activity levels recorded for the keywords based on a user's activity which has occurred; and

computer readable program code means for delivering digital objects to the user based on the weighted activity levels for a plurality of keywords.

19. A method for programmatically calculating a weighted sum without the need for maintaining the value of each individual term, comprising the steps of:

(a) providing a weighted sum equation that can be represented in recursive form;

(b) redefining the weighted sum equation to produce a recursive equation; and

(c) applying the recursive equation to progressively update the weighted sum.

20. A method as in claim 19 wherein the step of applying the recursive equation further comprises the step of applying a time weighted function to decrease the previous system activity count.

21. A method as in claim 19 wherein the step of applying the recursive equation further comprises the step of applying a time weighted exponential function to decrease the previous system activity count.

22. A method for tracking a computer system's activities and decreasing values that represent a computer system's previous activities, comprising the steps of:

- (a) storing a previous system activity level in a database configured to track the computer system's activities;
- (b) receiving a current system activity level derived from the computer system's current activities;
- (c) applying a weighted reduction to the previous system activity level to form a weighted system activity level;
- (d) combining the weighted system activity level with the current system activity level to form an updated system activity level; and
- (e) replacing the previous system activity level in the database with the updated system activity level.

23. A method as in claim 22 wherein the step of applying a weighted reduction further comprises the step of applying a time weighted function to decrease the previous system activity level.

24. A method as in claim 22 wherein the step of applying a weighted reduction further comprises the step of applying a time weighted exponential function to decrease the previous system activity level.